

1.0 INTRODUCTION

1.1 Background

The Sacramento/San Joaquin River Delta system plays a critical role in the California economy. The Delta and its tributaries provide a significant share of the water resources required to meet municipal, industrial, agricultural, recreational and environmental needs. Each of these sectors contributes to the economic well-being of the entire state. The agricultural sector is both one of the top contributors to the state's economy and the largest consumptive user of its water resources. As the State Water Resources Control Board (SWRCB) engages in a process to balance competing uses of scarce water supplies, understanding the economic and financial consequences of reduced water availability for California agriculture, its related industries and local economies is critical.

The Bay-Delta Hearings (D. 1485) Economic Work Group identified the need for an independent assessment of the likely impacts of improved water quality and flow standards in the Delta on agriculture. This study is designed to provide information to the SWRCB as it enters the "water rights phase" of the Bay-Delta Hearings. The focus of the analysis is an assessment of the short and long-run economic and financial impacts of water supply reductions on California's agricultural sector and related industries. Representatives of government, water agencies, agriculture and environmental organizations participated in the design of the study to assure common understanding and agreement on the research base used for analyzing the impacts of alternative water supply scenarios.

1.2 Study Goals and Objectives

Research for this study was conducted in a phased, interactive manner to assure that the diverse participating parties were fully informed during the process. The study team and its Technical Advisory Committee (TAC) proposed a study approach that would capture the complex legal,

institutional and physical environments in which water agencies and producers operate and the implications these complexities present for assessing adjustments and impacts.

A case study approach was selected to capture and reflect these complexities. The lack of a consistent, state-level data base covering the relationships between water availability, the agricultural sector and the state's economy provides additional impetus for a case study approach. Through this approach the legal, institutional and physical system constraints facing decision makers as they respond to reduced water supplies can be examined at a disaggregated level. This level of analysis is necessary for an accurate identification of the financial and economic impacts affecting districts and producers.

The documented responses of water suppliers (water districts, irrigation districts, water storage districts and other organizations) and agricultural producers to drought-induced water scarcities, both present and historical, provide an indication of the nature and likely direction and magnitude of the economic and financial impacts of future supply reductions. An analysis of short-run responses to water reductions can help to identify both positive and negative impacts that are largely temporary. In the long-run, however, continued shortages will necessitate adjustments with longer term implications for water suppliers, production agriculture, related agricultural industries and the state's economy more broadly. This study provides a research base for such an assessment.

Specific objectives for the study include:

- Determine the research base needed to assess the likely short-run and long-run impacts of a range of alternative supply levels on agriculture, related industries and local economies, and the resource base;
- Through a study of selected water supply districts, and based upon available data:
 - identify the magnitude of water supply reductions for selected water suppliers and related short-run responses and long-run adjustments;
 - identify the existing legal, institutional and physical system constraints and opportunities which guide observed adjustments to water shortages;

7.3 Identifying Impacts of Reductions in Surface Water Supplies

The first few tables present an inventory of the impacts or changes identified in Chapters 4 and 5 for water suppliers and producers, categorized by the different response and adjustment mechanisms. Table 7.1 is an inventory of observed and potential impacts for the case study water suppliers or districts. Table 7.2 presents the same information for case study producers. Impacts are further categorized by type as identified above: direct (district/producer) and indirect (local economy/resource quality). From these inventories, a subset of "priority" impacts can be selected for economic analysis in Phases III and IV.

For illustrative purposes, the impacts inventoried in Table 7.1 for water suppliers are mapped into an economic/financial analysis which is shown in Table 7.3. Observed and potential impacts of reduced water supplies on district income, operating expenses and capital investments are classified under financial and economic prices. Table 7.4 presents a similar economic framework for producers. Tables 7.5 and 7.6 inventory the local, state and national economy and resource quality impacts or "indicators of change" associated with reductions in surface water supplies. A subset of these indicators will be selected for qualitative and/or quantitative assessment, as needed.

7.4 Identifying Constraints on Adjustments

Table 7.7 provides a comprehensive list of the constraints identified during Phase II research on the abilities of districts and producers to adjust to changing water reliability and supply levels. These constraints are broadly categorized by: 1) level, timing and reliability of water supply; 2) management of available supplies, including institutional, legal and physical system constraints; and 3) financial and resource quality constraints. Table 7.8 presents a smaller inventory of similar constraints at the farm-level. The proposed plan of study for Phase III includes analysis of the expected mitigating effects of relaxing or changing some of the more important of these "binding" constraints.

Table 7.1: Inventory of Observed and Potential District Impacts Categorized by Response			
Responses and Associated Impacts			
Indirect	Direct	District	Producer
Local Economy Resources			
Impacts of Developing New Supply Sources			
Capital expenditures			
Legal and engineering costs for environmental assessments			
Deferral of other investments			
Higher per unit water costs			
Uncertain environmental impacts			
Reduce supplies for compelling purposes			
Uncertain impacts on contracts (federal reclamation law)			
Impacts of Changing Allocation Rules			
Intra-district equity and efficiency issues			
Induce conjunctive water management			
Induce intra-district transfers.			
Provide incentives to fallow land or shift crops			
Impacts of Changing Water Rates			
Increase or decrease sales revenues			
Provide incentives to reduce demand/increase irrigation efficiency			
Provide incentives to fallow land or shift crops			
Impacts of Improved District Water Management			
Higher operation and maintenance expenditures			
Higher monitoring expenses			

APPENDIX A: List of TAC Members

Name	Affiliation
Robert Alcott	El Dorado Irrigation District
Sandra Archibald	Food Research Institute, Stanford University
James Beard	Alameda County Water District
Gary Bedker	U.S. Bureau of Reclamation
Joe Callahan	Sierra Club
William DuBois	California Farm Bureau Federation
Sandra Dunn	DeCuir and Somach
Farhad Farnam	Department of Water Resources
John Farnkopf	Bay Area Water Users Association
Mike Farro	State Water Resources Control Board
David Fullerton	Committee for Water Policy Consensus
Ray Gaines	Central Valley Project Water Association
Howard Hirahara	U.S. Bureau of Reclamation
Lyle Hoag	California Urban Water Agencies
Ray Hoagland	Department of Water Resources
William Johnson	Modesto Irrigation District
Leroy Kennedy	Turlock Irrigation District
Bob McKusick	Northwest Economic Associates
Lloyd Mercer	Economics Dept., UC Santa Barbara
W.D. Morgan	Economics Dept., UC Santa Barbara
Tim Quinn	Metropolitan Water District of Southern Calif.
Thomas Rinn	Metropolitan Water District of Southern Calif.
Cliff Schulz	State Water Contractors

BAY-DELTA OVERSIGHT COUNCIL

DRAFT

BRIEFING PAPER ON DELTA WATER QUALITY FOR DRINKING WATER AND AGRICULTURAL USES

Bay-Delta Oversight Council

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